



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

elo

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/092,053	03/05/2002	Nobuyasu Nagafuku	34457	7804
116	7590	07/02/2004	EXAMINER	
PEARNE & GORDON LLP 1801 EAST 9TH STREET SUITE 1200 CLEVELAND, OH 44114-3108			NGUYEN, DONGHAI D	
			ART UNIT	PAPER NUMBER
			3729	

DATE MAILED: 07/02/2004

2/

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/092,053

Applicant(s)

NAGAFUKU ET AL.

Examiner

Donghai D. Nguyen

Art Unit

3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 16-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-30 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-15, drawn to an electronic component mounting method, classified in class 29, subclass 840.
 - II. Claims 16-22 and 29-30, drawn to an electronic component mounting apparatus, classified in class 29, subclass 739.
 - III. Claims 23-28, drawn to an electronic component mounting data creating method; a mounting data creating device; and a program for mounting an electronic component, classified in class 700, subclass 121.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions Group I and Group II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process pick and place machine.
3. Inventions Group I & II and Group III are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the

Art Unit: 3729

instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the combination does not require the fetching/creating mounting data. The subcombination has separate utility such as creating data.

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

5. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II or Group III and vice versa, restriction for examination purposes as indicated is proper.

6. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

7. During a telephone conversation with Jeffery J. Sopko on March 19, 2004 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-15.

Affirmation of this election must be made by applicant in replying to this Office action. Claims 16-30 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

8. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Art Unit: 3729

Drawings

9. Figures 29, 30(a), 30(b), 31(a), and 31(b) should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

10. The drawings are objected to because in Figures 1, 23, 24 the label "FEED-FOWARD" should be --FEED-FORWARD--. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

11. The abstract of the disclosure is objected to because the claimed invention directs to the electronic component mounting method. Correction is required. See MPEP § 608.01(b).

12. The disclosure is objected to because of the following informalities: the phrase "embodiment.Fig. 24" (page 28, line 15) should be --embodiment. Fig. 24--. List of Figures 28(a), 28(b), and 28(c) are not found in the page 29. Numeral "18a'" (page 32, line 1) should be --18a'--. Numeral "10" (page 36, line 21) should be --12--.

Appropriate correction is required.

13. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: --METHOD FOR MOUNTING AN ELECTRONIC COMPONENT--.

Claim Rejections - 35 USC § 112

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

15. Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase “detecting a ... is printed” (claim 1, lines 3-5) is vague and indefinite since it is unclear the relationship between the printing position (solder paste) and the land. Furthermore, it is certain how and when the land and the solder paste are formed or disposed on the circuit board (i.e., the solder paste is disposed on the land or not) because the relationship between them is unclear. Therefore, it is uncertain where the printing position is on the circuit board and how it is used as a reference for mounting the electronic component.

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 1-4 and 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by US Pat. No. 5,555,316 to Tsujikawa et al.

Regarding claims 1 and 2, Tsujikawa et al disclose an electronic component mounting method for mounting an electronic component comprising the steps of: detecting (by inspecting

Art Unit: 3729

apparatus 13) a printing position (center of window 59) of a solder paste (52/57) on a circuit board (9) on which a land (58) is formed and the solder paste is printed; mounting the electronic component on the circuit board by referring to the printing position of the solder paste as a reference; and feed-forward controlling a detected result of the printing position of the solder paste from the step of detecting to the step of mounting, wherein the detected result is an output at the step of detecting (Abstract, lines 1-6).

Regarding claim 3, Tsujikawa et al disclose the step of individually setting a target mounting position of each electronic component based on a shift amount between a position of the land corresponding to the electronic component to be mounted and the printing position of the solder paste for the land (Col. 6, lines 5-10).

Regarding claim 4, Col. 8, lines 15-24) disclose steps of: obtaining a shift amount between position of the land corresponding to the electronic component to be mounted and the printing positions of the solder paste for each of the electronic components to be mounted on the circuit board, calculating an added average value of the shift amounts thus obtained, and collectively setting a target mounting position of each of said electronic components based on the added average value thus calculated.

Regarding claim 12, Fig. 7 shows the step of mounting is not carried out in the case that the electronic component interferes with adjacent other electronic components on the circuit board.

Regarding claim 13, Tsujikawa et al disclose the step of changing a target mounting position of the electronic component to be mounted toward the position of the land and from the printing position of the solder paste to a position (Col. 8, lines 1-8).

Regarding claim 14, Col. 10, lines 45 to Col 11, line 6) discloses the steps of obtaining a shift amount in a direction of rotation and a shift amount in a horizontal direction in the case that a shift amount of a position of the land corresponding to the electronic component to be mounted from the printing position of the solder paste for the land exceeds a predetermined shift amount, and setting a target mounting position and a target rotating angle of the electronic component based on the shift amounts in the horizontal direction and the direction of rotation.

Regarding claim 15, Tsujikawa et al disclose the step of detecting includes the steps of: picking up an image of a circuit board having a solder paste printed thereon (Fig. 14); reproducing a shape of a land hidden in the solder paste by interpolating the picked-up image with referring previously registered land data; and obtaining a center of a position of the land from the shape of the land thus reproduced (Figs. 8-10).

18. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by JP Application No. 05-186,940 to Sasaki.

Regarding claims 1 and 2, Sasaki discloses an electronic component mounting method for mounting an electronic component (7) comprising the steps of: detecting (by inspecting apparatus 14) a printing position (6) of a solder paste (6) on a circuit board (1) on which a land (5) is formed and the solder paste is printed; mounting the electronic component on the circuit board by referring to the printing position of the solder paste as a reference (See Constitution); and feed-forward controlling a detected result of the printing position of the solder paste from the step of detecting to the step of mounting, wherein the detected result is an output at the step of detecting (Fig. 1).

Art Unit: 3729

Allowable Subject Matter

19. Claims 5-11 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

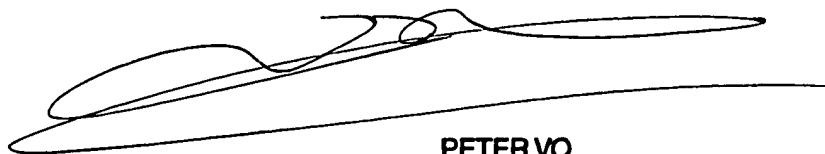
20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghai D. Nguyen whose telephone number is (703) 305-7859. The examiner can normally be reached on Monday-Friday (9:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter D. Vo can be reached on (703) 308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DN



PETER VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700